IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application : **10/799,800**

Applicant(s) : **ROOSENDAAL et al.**

Filed : **3/12/2004**

Confirmation : **8307**

T.C./Art Unit : **2871**

Examiner : **NGUYEN, Hoan C.**

Atty. Docket : **NL-010603B**

Title: **ARRANGEMENTS IN A TRANSFLECTIVE LIQUID CRYSTAL DISPLAY**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 23 October 2006, finally rejecting claims 21-24 of the subject application.

This paper includes (each beginning on a separate sheet):

1. **Appeal Brief;**
2. **Claims Appendix;**
3. **Evidence Appendix; and**
4. **Related Proceedings Appendix.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to **Koninklijke Philips Electronics N. V., Eindhoven, NL**.

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-20 are canceled.

Claims 21-30 are pending in the application.

Claims 27-28 would be allowable if appropriately rewritten in independent form.

Claims 25-26 and 29-30 are withdrawn.

Claims 21-24 stand rejected by the Examiner under 35 U.S.C. 102(b).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection in the Office Action dated 23 October 2006. A reply to the final rejection was filed on 18 December 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention addresses a transreflective display device, and uses selective retardation and polarization to enhance the contrast ratio in the reflective mode (Applicants' page 2, lines 3-14). As illustrated in replacement FIG. 1, an optical retardation layer (16a) is patterned such that the reflective sub-pixels 11b include the retardation (116b) and the transmissive sub-pixels do not (116a). A quarter-wave retardation layer (16a) provides a half-wave retardation as the light enters and exits the layer, thereby allowing the reflected light to exit the polarizer (17a); the retardation (16a) between the polarizer (17a) and liquid crystal (12) provides a higher contrast dark-state (page 6, lines 1-5). To reduce power consumption, a 90^{o} twist is used in the liquid crystal layer (page 6, lines 6-10). In the transmissive mode, perpendicularly oriented polarizers (17a, 17b) provide a high contrast dark-state (page 6, lines 10-11); thus, since the liquid crystal provides the 90^{o} twist required to allow the internal light to exit the polarizer (17a), the retardation layer (16a) is removed (116a) at the transmissive sub-pixel (page 7, lines 3-11).

As claimed in independent claim 21, the invention comprises a transflective display device that is operable in both a reflective mode and a transmissive mode, that includes:

a plurality of pixels, each pixel including a reflective portion (11b) and a transmissive portion (11a) (applicants' page 4, line 28 - page 5, line2); and

a patterned optical layer (16a) that includes a pattern of pairs of first area segments (116b) and second area segments (116a), each pair of the plurality of pairs corresponding to each pixel of the plurality of pixels (page 5, lines 4-10),

wherein:

the first area segments (116b) provide a first optical retardation (page 8, lines 9-11);

the second area segments (116a) provide a second optical retardation (page 8, lines 18-22); and

the second optical retardation is substantially less than the first optical retardation (page 8, lines 9-22).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 21-24 stand rejected under 35 U.S.C. 102(b) over Iino (USPA 2003/0001994).

VII. ARGUMENT

Claims 21-24 stand rejected under 35 U.S.C. 102(b) over Iino

> "A rejection under U.S.C. 102(b) is proper only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim." **MPEP 2131**. "There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." **BPAI Opinion No. 2005-2289, October 2005**.

Claims 21-24

Iino fails to teach a patterned optical layer that includes a pattern of pairs of first area segments and second area segments, wherein the first area segments provide a first optical retardation and the second area segments provide a second optical retardation that is substantially less than the first optical retardation, as specifically claimed in claim 21, upon which claims 22-30 depend.

Iino does not selectively use optical retardation to optimize the contrast ratio of a display. Iino teaches the conventional use of unpatterned retardation layers 106 and 116 above the liquid crystal material 50 (Iino [0062], last sentence).

The Office action asserts that Iino's layer 141 corresponds to the applicants' claimed patterned optical layer that provides first and second retardations. The applicants respectfully disagree with this assertion, because Iino's layer 141 is not configured to provide optical retardation.

Iino uses conventional reflective color filters (141R, G, B) in the reflective sub-pixels, and transmissive color filters (142R, G, B) in the transmissive sub-pixels. Gaps 141h are provided between the reflective color filters (141R, G, B) to allow the transmissive light to pass. Iino's color filter layer 141 is patterned, but Iino's reflective filters 141R, 141G, and 141B are not configured to provide optical retardation. As taught by Iino:

> "According to an enlarged view shown in FIG. 3, the selective-reflection color filter 141, which is an example of the first color filter, includes in each pixel a selective-reflection layer 141R that reflects R light and transmits G light and B light; a selective-reflection layer 141G that reflects G light and transmits R light and B light; and a selective-reflection layer 141B that reflects B light and transmits R light and G light. These selective-reflection layers 141R, 141G, and 141B are formed of known cholesteric liquid crystal, holograms, dychroic mirrors, or the like." (Iino [0071].)
>
> "In the case mentioned above, in FIGS. 2 and 3, where external light L1 (see FIG. 3) enters from the polarizer 105 side (that is, the upper side in FIG. 2), after passing through the polarizer 105, the transparent second substrate 20, and the liquid crystal layer 50, the incident light is reflected from the selective-reflection color filter 141 provided above the first substrate 10, and again after passing through the liquid crystal layer 50, the second substrate 20, and the polarizer 105, the light is then emitted from the polarizer 105 side as reflection light L2 (see FIG. 3) which is colored by a predetermined color. (Iino [0079])

As can be seen, Iino does not teach that the reflective layer 141 provides an optical retardation to the reflected incident light.

In the Advisory action of 9 January 2007, the Examiner cites a number of references that teach the use of cholesteric liquid crystal (CLC) to provide optical retardation. The applicants acknowledge that CLC can be configured to provide optical retardation, but respectfully note that providing optical retardation is only one of many possible configurations of CLC. As is well known in the art, optical devices are defined by the function that they perform. If a CLC device is configured to provide retardation, it is termed a retarder; if a CLC device is configured to provide color filtering, it is termed a filter; if a CLC device is configured to provide polarization, it is termed a polarizer. The mere fact that a CLC can be configured to provide retardation does not imply that Iino's CLC reflective filters 141 are configured to provide optical retardation. For example, the Advisory action cites Sharp et al. (USP 5,619,355, hereinafter Sharp); Sharp teaches a switchable filter that includes a combination of retarders and polarizers, wherein CLC material is used to provide polarization:

> "This invention includes color filters comprising the handedness switch in combination with cholesteric circular polarizers. CCPs reflect circularly polarized light of a specified handedness within a selected wavelength range, while wavelengths outside of the reflection band are transmitted." (Sharp, column 3, lines 26-31.)

In Sharp's figures, Sharp identifies retarders (20, 22, 24, 26, 20a, 20b, etc.) by their degree of retardation, and polarizers (30, 32, 33, 35, 35a, 35b, etc.) by their polarization. Referring to Sharp's CLC polarizers as retarders would be contrary to the accepted use of the terms in the art, just as referring to Iino's filters as retarders is contrary to the accepted use of the terms in the art.

Because Iino fails to teach a patterned optical layer that includes a pattern of pairs of first area segments and second area segments, wherein the first area segments provide a first optical retardation and the second area segments provide a second optical retardation that is substantially less than the first optical retardation, as specifically claimed in claim 21, the applicants respectfully maintain that the rejection of claims 21-24 under 35 U.S.C. 102(b) is unfounded, per MPEP 2131.

CONCLUSIONS

Because Iino fails to teach each of the elements of claim 21, the applicants respectfully request that the Examiner's rejection of claims 21-24 under 35 U.S.C. 102(b) be reversed by the Board, and claims 21-30 be allowed to pass to issue.

Respectfully submitted

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CLAIMS APPENDIX

1-20 (Canceled)

21. A transflective display device that is operable in both a reflective mode and a transmissive mode, comprising:
a plurality of pixels, each pixel including a reflective portion and a transmissive portion; and
a patterned optical layer that includes a pattern of pairs of first area segments and second area segments, each pair of the plurality of pairs corresponding to each pixel of the plurality of pixels,
wherein:
the first area segments provide a first optical retardation;
the second area segments provide a second optical retardation; and
the second optical retardation is substantially less than the first optical retardation.

22. The transflective display device of claim 21, wherein:
the first area segment of each pixel corresponds to the reflective portion of the pixel; and
the second area segment of each pixel corresponds to the transmissive portion of the pixel.

23. The transflective display device of claim 21, including a pair of polarizing layers that sandwich the pixels and the patterned optical layer.

24. The transflective display device of claim 23, wherein each pixel includes liquid crystal material sandwiched between electrodes.

25. (Withdrawn) The transflective display device of claim 21, wherein:
the first area segments include a polymerized liquid crystal material; and

the second area segments include a transparent material.

26. (Withdrawn) The transflective display device of claim 21, wherein:

the first area segments include a first polymerized liquid crystal material in a nematic liquid crystal phase; and

the second area segments include a second polymerized liquid crystal material in a clear state.

27. The transflective display device of claim 21, wherein:

the first area segments include a first polymerized liquid crystal material having a planar orientation at a first angle; and

the second area segments include a second polymerized liquid crystal material having a planar orientation at a second angle,

the first angle being substantially different from the second angle.

28. The transflective display device of claim 27, wherein the difference between the first angle and the second angle is approximately 45 degrees.

29. (Withdrawn) The transflective display device of claim 21, wherein:

the first area segments include a first polymerized liquid crystal material having a first birefringence value; and

the second area segments include a second polymerized liquid crystal material having a second birefringence value,

the first birefringence value being substantially greater than the second birefringence value.

30. (Withdrawn) The transflective display device of claim 21, wherein:

the first optical retardation is in a range of 80 to 100 degrees; and

the second optical retardation is at or near zero degrees.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.